Research in Action, Inc.

Establishing Procedures to Evaluate the Use of Accommodation on the Maine Educational Assessment

Prepared for

Valerie Seaberg
Chief of Staff

Maine Department of Education

July 10, 2006

In summer 2005, the Maine Department of Education began augmenting and standardizing its assessment error and detection procedures focusing on inclusion rates and the use of testing accommodations. Using the Quality Assurance Diagnostic Matrix (CCSSO, 2006) to determine critical areas within the agency that needed quality assurance practices, a set of long-term priorities was established over a two-year period. These activities will provide internal auditing and post hoc analysis to ensure that assessment and accountability results are based on the inclusion of students with disabilities, limited English proficiency, and other targeted subpopulations through appropriate assessment accommodations. Also, the agency will be increasing its ability to monitor the types of accommodations being used by targeted students to both understand trends at differing units of analysis and screen for unwanted consequences that might threaten the validity of inferences about student achievement and school productivity.

The Department continued to administer the MEA assessments in a standardized manner that allowed for score comparability across grade-levels; however, more data was needed to better understand the use of testing accommodations. The first step was to send a memorandum to each local superintendent regarding the agency's comprehensive SAU on-site visitations in the fall of 2005. A standardized interview protocol was established for each team member. The SAU on-site visitation design called for the collection of data from central office staff, district test coordinators, teachers, and others. The results from the initial field trials suggested the need for additional training and support for local assessment practices along with those associated with Maine's statewide assessment program.

The quantitative examination planned for fall 2006 will focus on two key areas: federal program inclusion rates and the use of testing accommodations across grades 3-8 and 11 for reading, mathematics, and science. The purpose was to understand distributional patterns and the magnitude of data anomalies found within state-level data. The data included all students regardless of their aggregation status.

Table 1. Subpopulation Membership in MEA-Grade 4

Subgroup	**2005 (count)**	**2005 (percent)**	**2006 (count)**	**2006 (percent)**	**2007 (count)**	**2007 (percent)**	**2008 (count)**	**2008 (percent)**
non-SWD	11950	83.4%						
SWD	2383	16.6%						
non-Minority	13511	94.3%						
Minority	822	5.7%						
non-LEP	14137	98.6%						
LEP	196	1.4%						
non-ED	9280	64.7%						
ED	5053	35.3%						
non-504	14192	99.0%						
504	141	1.0%						

The use of testing accommodations required several subroutines because the SWD are not exclusive in their authorization to have accommodations provided during testing. An exploratory examination of the master file identified the frequency accommodations where used by students in grade 4. To facilitate interpretation, the SWD and ELL files were evaluated independently.

Table 2. Accommodation Use-SWD-Reading Assessment-Grade 4

Code	Description	Count	Percent
Scheduling Accommodations			
A.1.	at a time of day or a day of the week most beneficial to the student.	213	8.9
A.2.	in appropriate blocks of time for individual student needs, followed by rest breaks.	500	21.0
A.3.	with time extended beyond the regular test administration allotments until, in the administrator's judgment, the student could no longer sustain the activity.	1195	50.1
A.4.	with testing over several days (some extended time).	62	2.6
A.5.	using flexibility in the order in which content tests are given.	78	3.3
Setting Accommodations			
B.1.	individually.	360	15.1
B.2.	in a small group.	1361	57.1
B.3.	with student use of adaptive or special furniture, such as a carrel.	20	0.8
B.4.	in an alternative setting.	756	31.7
B.5.	at the student's home, by school personnel.	11	0.5
B.6.	preferential seating, such as student seated in front of the classroom.	27	1.1
B.7.	with the teacher facing the student.	58	2.4
B.8.	by school personnel known to the student other than the student's regular teacher (e.g., LEP, Title 1, Compensatory Education, Special Education).	907	38.1
B.9.	with special lighting/acoustics.	1	0.0
B.10.	in an environment with minimal distractions.	175	7.3
B.11.	with opportunity for student to move, stand and/or pace during assessment.	111	4.7
Equipment Accommodations			
C.1.	with student using magnifying equipment.	3	0.1
C.2.	with the student wearing noise buffers.	3	0.1
C.3.	using a template.	25	1.0
C.4.	with the student using amplification equipment (e.g., a hearing aid or auditory trainer).	24	1.0
C.5.	with the student using a typewriter or word processor.	33	1.4
C.6.	with student using arithmetic tables during the calculator-allowed sessions of the mathematics section only.	39	1.6
C.7.	using voice-actuated technology.	2	0.1
C.8	using other assistive technology, including augmentative/alternative communication	8	0.3
C.9.	using a bilingual dictionary.	4	0.2
C.10	with student using place markers to maintain place.	29	1.2
Recording Accommodations			
D.1.	The student's answers were dictated to and recorded by the test administrator or recording device. *NOTE: Oral dictation is NOT an approved accommodation for the writing session.*	722	32.4
D.2.	spaced paper (does not apply to grade 8 MEA Online).	19	0.8
Modality Accommodations			
E.1.	Tests were administered in large print.	7	0.3
E.2.	Tests were administered in Braille.	1	0.0
E.3.	Tests were read to the student by the test administrator (with the exception of the reading passages).	477	20.0
E.4.	Tests were interpreted for the deaf or hearing-impaired student (with the exception	5	0.2

	of reading passages.)		
E.5.	An administrator gave test directions with verification that the student understood them.	1258	52.8
E.6.	Tests and/or student responses were translated word for word into native language for an LEP student by local personnel. (NOTE: Translation of the following is NOT allowed: the ELA-reading sessions, and student responses to the ELA-writing and ELA-reading sessions. Student responses to the mathematics and science & technology sessions may be translated into English. All student responses sent for scoring must be in English.)	2	0.1
E.7.	Tests were read in "Sheltered English" content for an LEP student in a manner that does not compromise test integrity.	3	0.1
E.8.	Mathematics tests were administered in sheltered English to eligible LEP Students.	0	0.0
Other Accommodations			
F.1.	Other (must be approved by the Department of Education in advance)*	2	0.1
F.2.	Other – related to Grade 8 MEA Online Assessment (must be approved by the Department of Education in advance)*	0	0.0

Table 3. Accommodation Use-ELL-Reading Assessment-Grade 4

Code	Description	Count	Percent
Scheduling Accommodations			
A.1.	at a time of day or a day of the week most beneficial to the student.	10	5.1
A.2.	in appropriate blocks of time for individual student needs, followed by rest breaks.	14	7.1
A.3.	with time extended beyond the regular test administration allotments until, in the administrator's judgment, the student could no longer sustain the activity.	48	24.5
A.4.	with testing over several days (some extended time).	1	0.5
A.5.	using flexibility in the order in which content tests are given.	8	4.1
Setting Accommodations			
B.1.	individually.	16	8.2
B.2.	in a small group.	56	28.6
B.3.	with student use of adaptive or special furniture, such as a carrel.	0	0.0
B.4.	in an alternative setting.	24	12.2
B.5.	at the student's home, by school personnel.	0	0.0
B.6.	preferential seating, such as student seated in front of the classroom.	0	0.0
B.7.	with the teacher facing the student.	8	4.1
B.8.	by school personnel known to the student other than the student's regular teacher (e.g., LEP, Title 1, Compensatory Education, Special Education).	43	21.9
B.9.	with special lighting/acoustics.	0	0.0
B.10.	in an environment with minimal distractions.	2	1.0
B.11.	with opportunity for student to move, stand and/or pace during assessment.	2	1.0
Equipment Accommodations			
C.1.	with student using magnifying equipment.	0	0.0
C.2.	with the student wearing noise buffers.	0	0.0
C.3.	using a template.	0	0.0
C.4.	with the student using amplification equipment (e.g., a hearing aid or auditory trainer).	0	0.0
C.5.	with the student using a typewriter or word processor.	0	0.0
C.6.	with student using arithmetic tables during the calculator-allowed sessions of the mathematics section only.	1	0.0
C.7.	using voice-actuated technology.	0	0.0
C.8	using other assistive technology, including augmentative/alternative communication	1	0.5
C.9.	using a bilingual dictionary.	10	5.1

C.10	with student use of place markers to maintain place.	0	0.0
Recording Accommodations			
D.1.	The student's answers were dictated to and recorded by the test administrator or recording device. *NOTE: Oral dictation is NOT an approved accommodation for the writing session.*	21	10.7
D.2.	spaced paper (does not apply to grade 8 MEA Online).	0	0.0
Modality Accommodations			
E.1.	Tests were administered in large print.	0	0.0
E.2.	Tests were administered in Braille.	0	0.0
E.3.	Tests were read to the student by the test administrator (with the exception of the reading passages).	11	5.6
E.4.	Tests were interpreted for the deaf or hearing-impaired student (with the exception of reading passages).	0	0.0
E.5.	An administrator gave test directions with verification that the student understood them.	64	32.7
E.6.	Tests and/or student responses were translated word for word into native language for an LEP student by local personnel. (NOTE: Translation of the following is NOT allowed: the ELA-reading sessions, and student responses to the ELA-writing and ELA-reading sessions. Student responses to the mathematics and science & technology sessions may be translated into English. All student responses sent for scoring must be in English.)	8	4.1
E.7.	Tests were read in "Sheltered English" content for an LEP student in a manner that does not compromise test integrity.	26	13.3
E.8.	Mathematics tests were administered in sheltered English to eligible LEP Students.	0	0.0
Other Accommodations			
F.1.	Other (must be approved by the Department of Education in advance)*	0	0.0
F.2.	Other – related to Grade 8 MEA Online Assessment (must be approved by the Department of Education in advance)*	0	0.0

Table 4. High Frequency Accommodations Comparison-Reading Assessment-Grade 4

Code	Description	SWD (count)	SWD (percent)	ELL (count)	ELL (percent)
A.3.	with time extended beyond the regular test administration allotments until, in the administrator's judgment, the student could no longer sustain the activity.	1195	50.1	48	24.5
B.2.	in a small group.	1361	57.1	56	28.6
E.5.	An administrator gave test directions with verification that the student understood them.	1258	52.8	64	32.7

The data in Table 4 suggests the high frequency accommodations are being used by both subpopulations. These accommodations are within those considered as "typical" for students with disabilities and English-language learners. Low incident accommodations associated with unique physical disabilities reflect anticipated rates based on how these conditions occur within the population. The use of translation (E6) was below expected rates because this accommodation is frequently used to support those non-English speaking students enrolled in ESL programs.

The distribution of high frequency accommodations follows those seen in other states and appears to be within reason; however, their influence on the student's overall reading score needed to be examined. The first step was to examine the magnitude and direction of four independent variables, three accommodations and one exogenous factor (ED). The economically disadvantaged variable (as a proxy for poverty) was selected because of its strong relationship with standardized test scores; therefore it needed to be controlled for prior to examining the influence of the accommodations. The dependent variable was the reading scale score for grade 4. The use of inferential statistics requires several assumptions, one being the normality of the dependent variable. A critical component of regression models is limiting the colinearity among independent variables. This problem occurred in the original models because of the strong correlations between the three accommodations variables (see Table 5). This phenomenon was addressed by using a factor analysis (principal component) to produce a new variable representing the presence of all three variables.

Table 5. Correlation Coefficients: ED, Accommodations and Reading Scale Scores

	ED	Extended Time	Small Group	Test Directions	Reading SS
Economically Disadvantaged	1	.141(**)	.147(**)	.136(**)	-.248(**)
Extended Time			.621(**)	.640(**)	-.307(**)
Small Group				.685(**)	-.373(**)
Test Directions					-.364(**)
Reading SS					

** Correlation is significant at the 0.01 level (2-tailed).

Table 6. Factor Analysis

	Initial Eigenvalues			Extraction* Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.297	76.583	76.583	2.297	76.583	76.583
2	.389	12.982	89.565			
3	.313	10.435	100.000			

* Extraction Method: Principal Component Analysis.

Several regression models were used to evaluate the amount of variance accounted for in the dependent variables. The final model (Table 7) entered the control (ED) variable first, then the accommodation variable. This produced a significant increase in the amount of variance accounted for in the reading scale scores. This result was expected based on the negative correlation coefficient represented in Table 5. In other words, after controlling for the influence of poverty, the students who received these accommodations scored significantly lower than all other students in the population. Based on these impact data, the hypothesis was substantiated in that students receiving the top three accommodations were not advantaged by their use.

Table 7. Linear Regression: Reading Scale Score

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.248(a)	.062	.062	10.53203	.062	926.864	1	14084	.000
2	.439(b)	.193	.193	9.76967	.131	2284.798	1	14083	.000

The translation accommodation (E6) was used by only ten students, eight of which were classified as English-language learners. As detailed in Table 8, these eight students scored significantly below all other 4th graders. In all cases, the students using this accommodation were deemed as "non-proficient" under the NCLB provision. This is proportionally unequal to the population because the number of non-proficient students, especially at the "Does Not Meet" level (see Table 9), is much higher for the eight students receiving translations. These data suggest the accommodation did not give these students an unwanted advantage by receiving translations.

Table 8. Translation Accommodation (E6) Descriptives

Translation	Mean	N	Std. Deviation
No	539.5252	14078	10.84898
Yes	510.0000	8	13.22336
Total	539.5084	14086	10.87268

Table 9. Translation Accommodation (E6) Comparative Distributions

		Reading Performance Level					Total
		Exceeds	Meets	Partially Meets	Does Not Meet	Missing	
Translation	No	80	7267	5717	1014	245	14323
	Yes	0	0	2	6	2	10
Total		80	7267	5717	1020	247	14333